PASSF1.10.1v1
10/15/86

Quality Assurance Plan

PASCO LANDFILL/RRC
OCTOBER 1986

ESD, EPA Region 10
1200 6th Avenue
Seattle, Wa. 98101

Project Code: TEC-331A
Account Code: TFA10 PU67
Sample Numbers: 86434500 — 43 4527

Approvals:

Project Officer: Marcia Knadle Date 10/15/86

QA Officer: Ray R. Jones Date 10/15/86

~~Supervisor~~: Bernard Zavala Date 10/15/86
ESD
Review

1. Project Organization and Responsibility

The following is a list of key project personnel and their responsibilities:

Organization Manager	Lori Cohen
Project Officer	Marcia Knadle
QA Officer	Barry Towns
Field Operation	Jim Hileman / Marcia Knadle
Laboratory Operation	Mike Johnston
Data Quality Review	Bob Reick

2. Project Description: The Pasco Landfill (located about two miles northeast of Pasco) was the site of an industrial waste landfill operated by Resource Recovery Corporation. Off-site downgradient drinking-water and irrigation wells will be sampled for priority pollutants and on-site monitoring wells will be resampled for metals. (See attached map for sample locations; additional sites may be determined in field.)

A. Objective and Scope: Tri- and tetrachloroethylene have been observed in on-site monitoring wells at levels exceeding Federal Drinking Water Guidelines. In addition, metals analyses of E&E samples from the last two years yielded levels one to two orders of magnitude higher than for earlier samples taken by J-U-B Engineers (the Landfill's consultants). The objectives of this study are to:

1) Determine if downgradient contaminant migration has impacted drinking-water and irrigation wells.

2) Compare metals analyses between EPA/~~CPL~~ CLP lab and J-U-B Engineers' lab through analyzing split samples.

3) Report summarizing chemical levels in drinking-water wells with comparison to drinking water guidelines.

B. Schedule of Tasks and Milestones:

Activity/Date	10/21-23/86	daily (when practicable)	11/31/86	12/31/86	1/31/87
Sample Collection	10/21-23/86				
Sample Shipment		daily (when practicable)			
Analyses Complete			11/31/86		
QA Review				12/31/86	
Data Summarization					1/31/87

C. Data will be used to:

1) Determine current contamination status of downgradient drinking-water and irrigation wells.

2) Clarify discrepancies in metals analyses.

D. Sample Rationale:

1) Drinking-water and irrigation wells: Organic solvent contamination (tri- and tetrachloroethylene) was found at levels one to two orders of magnitude higher than Federal Drinking Water Guidelines in three monitoring wells (EE-2, EE-3, and JUB-2) in the southwest part of the Pasco Landfill. In the vicinity of the landfill, previous studies (E&E, J-U-B Engineers) have estimated groundwater velocities in the Ringold sands and gravels at 40 to 60 feet/year, flowing to the southwest. Because of these high flow rates, several downgradient domestic and small public supply wells and one irrigation well in an area up to 1.5 miles southwest of the landfill (see map) have been selected from DSHS and USGS records for sampling for the entire Hazardous Substance List. Since virtually all the wells in this area are finished in the (unconfined) Ringold aquifer (including the large-capacity irrigation wells), this sampling should yield qualitative information about possible contaminant plume migration, as well as confirming the status of each well. Because the turbine pump in the irrigation well may aerate the water in the well, its VOA results will probably be biased low.

2) Monitoring wells (see map): J-U-B Engineers sampled their five monitoring wells for standard QW parameters (including some metals) in 1982 and 1983. In 1984 and 1985, E&E resampled these wells plus nine new monitoring wells for the full Hazardous Substance List. The metals results from E&E's resampling were consistantly one to two orders of magnitude higher than J-U-B Engineers' earlier results. They have requested that EPA resample two or three of those wells and provide split samples to allow comparison of the same samples by the two different labs. In addition, the selected wells (EE-1, EE-2, and JUB-CW) will be purged using J-U-B Engineers' bladder pump, and samples taken both by bladder pump and by bailer to allow comparison of the different sampling techniques previously used by J-U-B Engineers and E&E.

3) Numbers and types of samples:

# Sampl.	Sample Matrix	Collection Frequency	Analytical Parameter	Type of Sample Container	Sample Preservation	Sample Holding Time	Analytical Detection Limit
26	water	grab	Metals	1-qt cubi	ice	6 mos*	ppb
12	water	grab	VOAs 2	40ml glass	ice	5 days	ppb
12	water	grab	BNA/ Pest 2	1/2 gal gl	ice	7 days	ppb

* Samples will be acidified in the lab.

There will be two transport blanks (one for the priority pollutants and one for the metals), and three transfer blanks (one at a drinking-water well, one at the irrigation well, and one at the landfill).

3. Data Quality Objectives

   A. Precision and accuracy protocols/limits: Detection limits and precision and accuracy will be determined by the EPA Region 10 Laboratory in accordance with recommended protocols for establishing data quality indicators. QAMS draft calculation of precision, bias and limits of measurement per chemical and physical measurements. Precision and accuracy results will be reported to the field operations section.

   B. Sample procedures will conform to those specified in EPA 600/4-82-029.

   C. Data Comparability: Data will be reported according to established Regional Laboratory data reporting protocols. Samples will be analyzed according to approved analytical procedures.

   D. Data Completeness: All samples collected are to be analyzed with appropriate supportive documentation. Data will be maintained in the laboratory and will be made available upon request by the primary investigator.

4. Sampling Procedures:

   A. For drinking-water wells the sampling procedure is designed to reflect the water quality at the point of use. Therefore, wells will not be purged, and samples will be taken directly from a household tap.

   B. The irrigation well 9/30-21J1 will be purged and sampled using the 125 horsepower turbine pump currently installed in the well. Since the well should pump between 1000 and 3000 gpm (depending on whether it's hooked up to the sprinklers or open discharge), three casing wolumes should be purged in a matter of minutes. The sample will be taken from a spigot located near the well.

   C. In general, the following procedure should be followed when sampling ground water from monitoring wells:

      - Prior to purging the monitoring wells, static water levels must be obtained.
      - In general, three to five casing volumes should be purged. (Since hydraulic conductivities and transmissivities are locally high, three casing volumes will be purged.)

- Proper decontamination should be performed on the bailers/pump between purging and sample collection. (A separate bailer will be used at each well at the landfill.)
- A rinsate sample will be collected from the sampling pump at each site.

Calculations of casing volumes:

The following information is needed:
- Well casing radius (inches)
- Well depth (feet)
- Water depth (feet)

$$\text{Static Volume} = \text{Water Depth} \times (\text{Well Casing Radius})^2 \times 0.163$$

Casing Volumes of Pasco Landfill Monitoring Wells and Irrigation Well 9/30-21J1

	Well Number	Depth of Water	Depth to Water	Water Depth	Casing Radius	One Casing Volume(gal)
*	EE-1	88	55	33	1	0.54
*	EE-2	88	68	20	1	0.33
	EE-3	87	62	25	1	0.41
	EE-4	72	43	29	1	0.47
	EE-5	72	55	17	1	0.28
	EE-6	102	72	30	1	0.49
	EE-7	100	72	28	1	0.46
	EE-8	100	75	25	1	0.41
	EE-9	97	74	23	1	0.37
*	JUB-CW	70	49	21	1	0.34
	JUB-1	91	65	26	1	0.42
	JUB-2	83	57	26	1	0.42
	JUB-3	90	69	21	1	0.34
	JUB-4	60	39	21	1	0.34
*	9/30-21J1	130	65	65	8	680

* Wells to be sampled.

For all samples:

- Transfer and transport blank samples will also be obtained.
- Field parameters (conductivity, pH, and temperature) will be taken for each sample.

All sample containers will be supplied by the EPA Region X Lab. These will consist of quart cubitaners, half-gallon glass jars and 40-ml glass vials. All containers will be prepared by the EPA Region X Lab.

5. Sample Custody Procedures: Samples will be in the custody of EPA personnel. Region 10 Chain of Custody procedures and forms will be used. A chain of custody form will accompany all samples. Custody seals will be placed on all shipping containers.

6. Calibration Procedures and Preventive Maintenance: Laboratory analytical equipment will be calibrated and maintained according to lab SOP's and analytical manufacturers manuals.

7. Analytical Methods: All samples collected during this project will be analyzed in accordance with EPA approved or recommended methods and associated quality control procedures.

8. Documentation, Data Reduction and Reporting

   A. Documentation: Field notes, photos, field sample data sheets will be used to document survey sample activities.

   B. Data Reduction and QA Review: EPA Region 10 laboratory will perform data reduction and QA Review, then forward through RSCC to authorized inspector or designated manager. This will include a DQOs summary and Precision and Accuracy information for the analysis performed.

9. Data Assessment: The Technical Support Section (ESD) will be responsible for data assessment, summarization and dissemination to interested programs.

10. Performance/System Audits: EPA Region 10 Laboratory participates in EPA's on-going semi-annual performance evaluation studies. The specific documentation for analysis performed for these studies is a matter of record in the Regional QA Office. No system audit will be conducted for this survey.

11. Corrective Action: Corrective action procedures that might be implemented from QA results or detection of unacceptable data will be developed when and where required by the field operations section.

12. Reports: Reports development and distribution will be the responsibility of the Field Operations and Technical Support Branch.

13. Investigation-Derived Wastes: Purge water at the irrigation well will be discharged at the well, preferably through the sprinkler system. Purge and rinsate water from the on-site monitoring wells will be stored in 3 55-gallon drums (one for each well) and stored on-site pending laboratory results. Drums containing water considered to be hazardous waste will be removed to an approved disposal site; other drums will be emptied near the wells from which the water came.

14 Safety: Level D protective clothing (rubber boots, rubber gloves, and overalls) will be worn at all times. In addition, at the landfill monitoring wells, Level C (air-purifying respirator with organic vapor cartridge) will be worn until headspace HNu readings have been taken. If readings exceed 5 ppm benzene equivalents, no sample will be taken. If readings are above background, Jim Hileman will proceed with the sampling. Marcia Knadle has not successfully fit tested a respirator and will not approach a monitoring well until Jim Hileman has established that HNu readings are not above background.

15. Equipment:

4 - bailers for sampling
24 - 40-ml glass VOA vials
24 - 1/2-gallon glass jars
50 - 1-qt cubitainers
6 - ice chests
1 - 100-ft steel tape and chalk and 1 electric tape for measuring static water levels in monitoring wells and the irrigation well.
Shipping materials, sample documentation materials, field notebook
Decontamination water and materials (rinse water for the pump and tapes)
2 - transport blanks
Deionized and carbon-free water for 3 transfer blanks
3 - 55-gal. drums for investigation-derived wastes
Safety equipment: boots, gloves, overalls, HNu meter, air-purifying respirator with organic vapor filters

SAMPLE ALTERATION CHECKLIST

Project Name and Number:

Material to be sampled:

Measurement Parameter:

Standard Procedure for Field collection & Laboratory Analysis (cite references):

Reason for change in Field Procedure or Analytical Variation:

Variation from Field or Analytical Procedure:

Special Equipment, Materials, or Personnel Required:

Initiators Name: _____ Date: _____

Project Approval: _____ Date: _____

Laboratory Approval: _____ Date: _____

QA Officer/Reviewer: _____ Date: _____

Sample Control Center: _____ Date: _____

CORRECTIVE ACTION CHECKLIST

Project Name and Number:

Sample Dates Involved:

Measurement Parameter(s):

Acceptable Data Range:

Problem Areas Requiring Corrective Action:

Measures Required to Correct Problems:

Means of Detecting Problems and Verifying Correction:

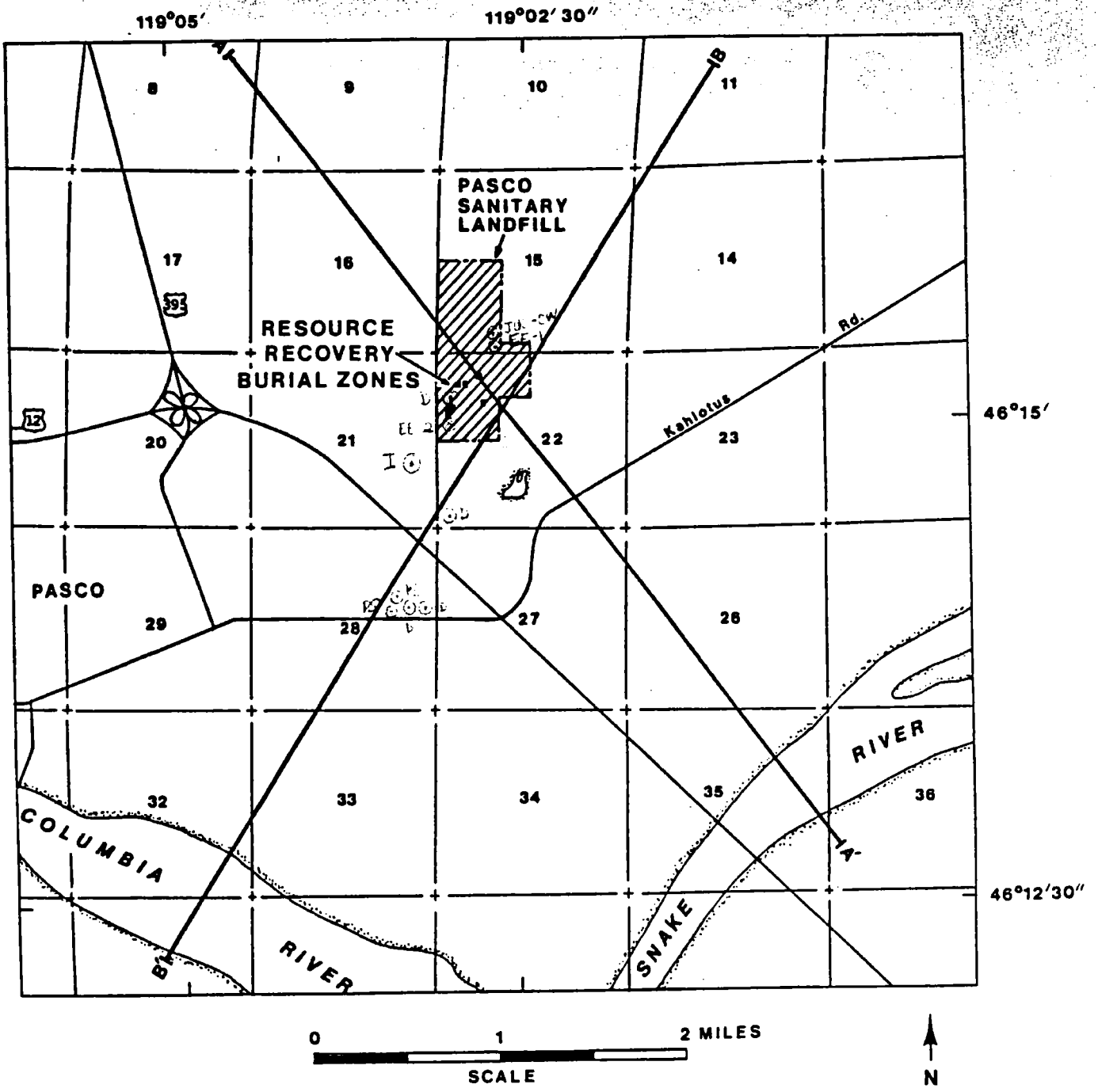
Initiators Name: _____ **Date:** _____

Project Approval: _____ **Date:** _____

Laboratory Approval: _____ **Date:** _____

QA Officer/Reviewer: _____ **Date:** _____

Sample Control Center: _____ **Date:** _____



LEGEND

A — A' Location and name of geologic cross-section

12 U.S. Route

15 U.S. Public Land Survey section number

⊙ Well to be sampled

PS - public supply
D - household
I - irrigation
EE-2 - monitoring well

} Locations approximate

ecology and environment, inc. SEATTLE, WA	
JOB #: R 10-8410-14	
D. Pippenger	10/11/85

Figure 4.2 Locations of geologic cross-sections A-A' and B-B', Resource Recovery Corporation vicinity, Pasco, Washington, from DOE files on Pasco Sanitary Landfill (7).

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